

Start Menu Options

All other menus are accessed from the Start Menu. The available options are:

- Setpoint Menu Provides verification and adjustment for all user setpoints of the RRC2-mini altimeter.
- Flight Log Menu Retrieve all previous flight information stored in the altimeters non-volatile memory.
- Diagnostics Menu Perform the diagnostic features provided by the RRC2-mini altimeter.
- Escape to Flight Mode Exit the Start Menu and return to normal flight operations mode.

Setpoints Menu

All user adjustable setpoints are available from this menu. You can verify all setpoints, and likewise you can adjust all setpoints. The RRC2-mini provides 2 independent setpoint "profiles". A "profile" is a COMPLETE group of setpoints. In addition to either setpoint profile is based upon the position of the Profile Select switch at power-up time (refer to Figure 1). This convention for profile selection applies to both regular flight operations mode and setpoint adjustments.

Setpoints Menu Navigation and Setpoint Adjustment

To scroll to the next available setpoint choice in the menu, tap the SELECT pushbutton. To choose a setpoint, tap the ENTER pushbutton. After a setpoint has been chosen, the piezo and LED will repeatedly flash/chirp the current value of the setpoint (for verification). Tap the SELECT pushbutton to scroll to the next setpoint in the menu, or tap the ENTER pushbutton to modify the chosen setpoint value. If you've elected to modify a setpoint, the unit is now awaiting the new setpoint value. Tap the SELECT pushbutton according to the newly desired value (example: tap the button 10 times for a value of TEN). Press ENTER when complete. The unit will now chirp back the newly entered setpoint value. All setpoint values stored in non-volatile memory.

Setpoints Menu Options

- Main AGL AGL elevation for the MAIN event. It is adjustable between 300' and 3000' in 100' increments (represented by a value of 3 to 30).
- Mach Inhibit Time Delay time (in seconds) after launch that the unit will not apply the apogee detection algorithm. The actual delay time is adjustable between 0 and 30 seconds (represented by a value of 1 to 31). Note that 0 seconds (no mach inhibit) is actually represented by a value of 1. The delay will always equal the setpoint value minus 1 (you cant enter a ZERO via the pushbuttons).
- Drogue Delay Delay time (in seconds) after event detection (determined by Deployment Mode) that the unit will delay the activation of the drogue output event. The actual delay time is adjustable between 0 and 15 seconds (represented by a value of 1 to 16). Note that 0 seconds (no delay) is represented by a value of 1. The delay will always equal the setpoint value minus 1.
- Main Delay Delay time (in seconds) after event detection (determined by Deployment Mode) that the unit will delay the activation of the main output event. The actual delay time is adjustable between 0 and 15 seconds (represented by a value of 1 to 16). Note that 0 seconds (no delay) is represented by a value of 1. The delay will always equal the setpoint value minus 1.
- Deployment Mode Represents how the Drogue and Main events are initiated. Dual Deploy Mode (1) operates the RRC2-mini in standard dual-deploy operation (Drogue event at apogee, Main event at Main AGL setpoint). Mode 2 (Apogee Only) activates both Drogue and Main outputs at apogee. If no delay is programmed for Drogue or Main, then both events are activated simultaneously. Mode 3 (Main Only) activates both Drogue and Main outputs at the Main AGL setpoint. Again, if no delay is programmed for Drogue or Main, then both events are activated simultaneously.
- Operations Mode Enables or Disables a particular altimeter operation based upon the setpoint value. Refer to the Operations Mode Chart on the Setpoint and Operations Matrix for the specific operational values.
 - Low Freq Chirp Enable/Disable modulated piezo operations
 - Chirp Battery Voltage Enable/Disable voltage chirp feedback during power up
 - Chirp All Setpoints Enable/Disable chirping of all setpoints (except Ops) in matrix order.
 - Battery Alarm Lockout Enable/Disable the low battery lockout and alarm (6.5 V and below) . (note: when active a continuous alarm tone sounds. Unit will not ARM).
- Escape to Flight Mode Exit the Setpoints Menu and return to the Start Menu.

NOTE: All setpoints can be initialized to Factory Defaults by pressing both pushbuttons and performing a power-up. The unit will respond by a quick piezo chirp and LED flash. Release both pushbuttons to complete the reset.

Flight Log Menu

Data from your last flight is available from this menu. These values are updated after each flight (immediately after apogee detection) and stored in non-volatile memory for later recall.

Flight Log Menu Navigation

To scroll to the next available log value in the menu, tap the SELECT pushbutton. To choose a log value, tap the ENTER pushbutton. When chosen, the piezo and LED will flash/chirp the current value, then return back to menu. Tap the SELECT pushbutton to scroll to the next setpoint in the menu, or tap the ENTER pushbutton again to reflash/rechirp the value.

- Last Apogee AGL Peak AGL elevation (in feet)
- Mach Inhibit Time Approximate velocity (in feet/sec)
- Last Time to Apogee Time (in seconds) from arming altitude to apogee event detection
- Total Launches Cumulative total launch count (0 to 255) since last reset

Diagnostics Menu

From this menu, the unit can also be placed into a mode to verify the basic operational integrity of the unit, including battery power, baro, continuity circuits and output controls. One can also ground test e-matches, ejection charges, or recovery system designs.

Diagnostics Menu Navigation

To scroll to the next available menu choice, tap the SELECT pushbutton. To choose a diagnostic, tap the ENTER pushbutton. The piezo and LED will flash/chirp based upon the type of diagnostic chosen. Tap the SELECT pushbutton to scroll to the next diagnostic in the menu.

Diagnostic Menu Options

- Battery Voltage Chirp/Flash the approximate battery voltage in volts and tenths of a volt.
- Current MSL Chirp/Flash the current MSL elevation in feet. Note that this value is subject to ambient pressure and temperature conditions.
- Input Test Mode This feature allows the user to verify the operation of the continuity input circuits. It operates identical to launch detect mode. Chirping/Flashing is as follows:
 - Long Beep/Flash No continuity on Drogue or Main
 - 1 Short Beep Continuity on Drogue only
 - 2 Short Beeps Continuity on Main only
 - 3 Short Beeps Continuity on Drogue and Main
- Output Test Mode This feature allows the user to manually activate the Drogue and Main output circuits. When this diagnostic is selected the piezo will emit a WARNING TONE for 5 seconds, and the LED will flash rapidly in RED to alert the user that output test mode has been selected. After the warning tone is complete, the unit is ARMED. Press the SELECT pushbutton to activate the DROGUE output. Press the ENTER pushbutton to activate the MAIN output.
- Escape to Start Menu Exit the Diagnostics Menu and return to the Start Menu.

IMPORTANT: Always exercise caution when using live pyrotechnic charges in the output test mode.
IMPORTANT: After selecting the Input/Output diagnostic, you must power off the unit prior to flight or additional testing.

Another useful accessory for testing the outputs are 12 volt DC panel lamps. The lamps will allow you to observe the proper operation of the outputs without the use of pyrotechnic devices.

Battery Considerations

The RRC2-mini is designed to be operated with a standard 9-volt alkaline battery. Always purchase and use premium alkaline batteries; 9-volt NiCad, NiMH, or other battery types may also be used.

IMPORTANT: Always use a battery system less than 10 Volts to avoid damaging the RRC2-Mini.

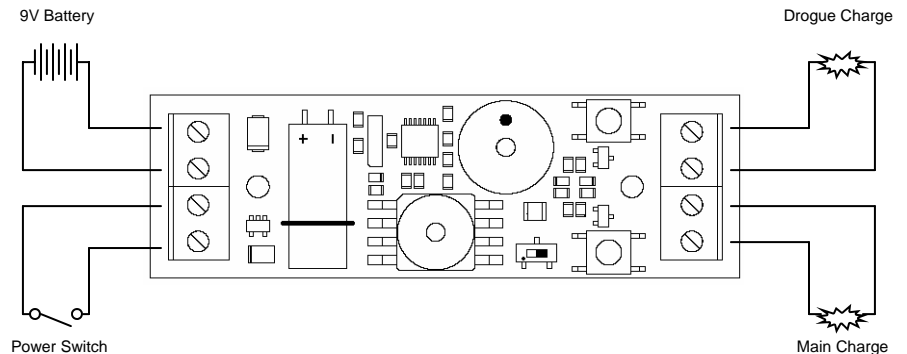
IMPORTANT: Always load test your battery prior to flight to ensure adequate power for reliable operation and ignition of the ejection charges. Inadequate sizing of an external battery system, or high current demands on the battery system during event initiation may lead to power and processor brown-out conditions. Always pre-test your external battery system design and deployment charge configurations prior to launch to ensure reliable operations.

To load test a 9V battery, you will require a DC multimeter capable of DC amp measurement with a 10 amp capability. A 9-volt battery can easily source in excess of 5 amps. Briefly connect the meter leads across the battery terminals to measure the DC current capacity. If the measurement is close to or drops below 2 amps, do not use the battery. Some batteries have built in testers, however it is still recommended that a meter be used for testing. Nominal load during operation is about 6 ma; and during output firing, the unit can draw over 5 amps.

Wiring Diagram

Figure 2 depicts the recommended wiring convention for RRC2-mini. The unit has silkscreen labeling showing the designation of all the terminals and the associated polarity for each terminal where applicable. Stranded 20-22 AWG wire is recommended for the battery and power switch terminals.

Figure 2 - Suggested Wiring Diagram for the RRC2-mini



Mounting Considerations

The payload section or electronics bay used for the RRC2 must be a sealed chamber with a static pressure equalization port. The sealing of the chamber is necessary for several reasons:

- Isolation of the electronics from the ejection-charge heat, residue, and over-pressure
- Isolation from the aerodynamic pressure and vacuum effects on the rocket airframe during flight
- Provides uniform static pressure equilibrium to ambient pressure during flight

Static Pressure Ports

Equally as important as sealing the electronics bay or payload section is the proper location, sizing, quality, and quantity of static pressure ports. Always try to locate a static port on the airframe where it is not obstructed by any object that may cause turbulence upstream of the airflow over the port. Also try to locate the static port as far away as possible from the nose cone or body transition sections. The rule of thumb is a 1/4" diameter hole for every 100 cubic inches of bay volume.